

Remarks

The Office Action is discussed in detail below.  
Paragraph Numbers provided below correspond to the  
5 paragraph numbers of the Office Action.

Claim Rejections 35 USC 103Paragraph 3 of Office Action

Claims 38, 41, 42, 45, 46, and 53-57 are rejected  
10 under 35 USC 103(a) as being unpatentable over Tamezane et  
(US 6,187,473) in view of Yang et al (US 6,461,762).

Claim 38 recites:

An electrochemical cell, comprising:

15 an electrode stack including a positive electrode  
disposed between a first and a second negative electrode,  
said electrode stack folded in a zigzag configuration with  
folds and creases; and

an aqueous alkaline electrolyte,  
20 wherein said positive electrode comprises a nickel  
hydroxide material and said negative electrodes comprise a  
hydrogen storage alloy.

Claim 53 recites:

25 An electrochemical cell, comprising:

an electrode stack including a negative electrode  
disposed between a first and a second positive electrode,  
said electrode stack folded in a zigzag configuration with  
folds and creases; and

30 an aqueous alkaline electrolyte,

wherein said positive electrodes comprise a nickel hydroxide material and said negative electrode comprises a hydrogen storage alloy.

5 Tamezane (US 6,187,473) is directed to a cylindrical nickel metal alkaline storage battery including a cylindrical casing and a pair of opposed electrodes spirally rolled up through a separator and coupled within said cylindrical casing. Tamezane provides no teaching or  
10 suggestion of rectangular batteries. In particular, Tamezane provides no teaching or suggestion of rectangular batteries having an electrode stack folded in a zigzag configuration.

Yang is directed to a rectangular battery  
15 incorporating an electrode stack of sequentially folded cells. Yang suggests that a rectangular battery with a folded electrode configuration may have smaller dead volume and increased energy density than a rectangular battery with a spiral coil electrode configuration (see Yang,  
20 column 1, lines 25-35). However, Yang provides no teaching, suggestion or motivation of replacing the cylindrical spiral wound battery of Tamezane with a rectangular battery having a sequentially folded electrode design.

25 In addition, Yang is directed to a lithium ion secondary battery using an organic (non-aqueous) electrolyte (col.2, lines 28-32). Yang provides no teaching, suggestion or motivation that the lithium ion chemistry may be replaced with a nickel metal hydride  
30 battery chemistry (which uses an aqueous alkaline electrolyte) for the particular sequentially folded electrode design disclosed.

In order for references to be properly combined there must be some suggestion or motivation to combine reference teachings. As noted, Tamezane is directed to a nickel  
5 metal hydride cylindrical battery using a spirally wound electrode stack. Yang is directed to a lithium ion rectangular battery using a sequentially folded electrode stack. Neither reference provides any teaching, suggestion or motivation that the references be combined. Hence, the  
10 combination is improper. The rejection of independent claim 38 (and remaining dependent claims 45, 46) as well as independent claim 53 (and remaining dependent claims 56,57) under 35 USC 103(a) as being unpatentable over Tamezane in view of Yang is improper and applicant request it be  
15 removed.

Claims 24, 27, 28, 31-33, and 47-52 are rejected  
under 35 USC 103(a) as being unpatentable over Fauvargue  
20 (US 5,569,559) in view of Shackle (US 5,300,373).

Claim 24 recites:

An electrochemical cell, comprising:

a positive electrode folded in a zigzag configuration  
25 having folds and creases;

at least one bifold negative electrode having a first leg and a second leg, said first leg and said second leg disposed within a first and a second fold on the same side of the zigzag configuration of said electrode; and

30 an aqueous alkaline electrolyte

wherein said positive electrode comprises a nickel hydroxide material and/or said at least one negative electrode comprises a hydrogen storage alloy.

5

Claim 47 recites:

An electrochemical cell, comprising:

a negative electrode folded in a zigzag configuration having folds and creases;

10 at least one bifold positive electrode having a first leg and a second leg, said first leg and said second leg disposed within a first and a second fold on the same side of the zigzag configuration of said electrode; and

an aqueous alkaline electrolyte

15 wherein said at least one positive electrode comprises a nickel hydroxide material and said negative electrode comprises a hydrogen storage alloy.

20 Faurvargue is directed to an alkaline polymer solid electrolyte. Fauvargue includes no teaching or suggestion of an electrode folded in a zigzag configuration and at least one bifold counter-electrode disposed within a first and second fold on the same side of the zigzag electrode.

25 Shackle is directed to an electrochemical cell stack including a continuous laminate web having a continuous electrode layer, a continuous electrolyte layer, and a plurality of discrete opposite polarity electrode segments secured on top of the electrolyte layer in predetermined  
30 locations. Shackle discloses that, in a preferred embodiment of the battery, the cathode material is a material such as vanadium oxide,  $V_6O_{13}$ . This is an example

of a lithium battery using a polymer electrolyte as shown  
in Table 36.10 of the Handbook of Batteries, Second  
Edition, David Linden, McGraw-Hill, Inc., page 36.19  
(presented at the end of this response). Shackle provides  
5 no teaching or suggestion of a nickel metal hydride battery  
chemistry using an aqueous alkaline electrolyte. In  
particular, Shackle provides no teaching or suggestion that  
a nickel metal hydride battery chemistry (using an aqueous  
alkaline electrolyte) may be used with the particular  
10 electrode configuration disclosed.

In order for references to be properly combined there  
must be some suggestion or motivation to combine reference  
teachings. As noted, Faurvargue provides no teaching or  
suggestion of a folded configuration, and Shackle provides  
15 to teaching or suggestion of nickel metal hydride  
batteries. Neither reference provides any teaching,  
suggestion or motivation that the references be combined.  
Hence, the combination is improper. The rejection of  
independent claim 24 (and remaining dependent claims 31-33)  
20 as well as independent claim 47 (and remaining dependent  
claims 51, 52) under 35 USC 103(a) as being unpatentable  
over Faurvargue in view of Shackle is improper and  
applicant request it be removed.

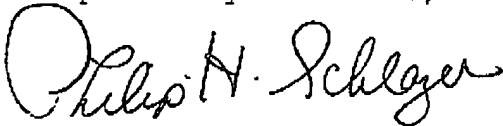
25

SUMMARY

In view of the above amendments and remarks claims 24,  
5 31, 32, 33, 38, 45, 46, 47, 51-53, 56, 57 are in condition  
for allowance. Applicant respectfully requests  
reconsideration, removal of remaining objections and  
rejections, and notification of allowance. Should the  
Examiner have any questions or suggestions regarding the  
10 prosecution of this application, he is asked to contact  
applicant's representative at the telephone number listed  
below.

15

Respectfully submitted,



20

Philip H. Schlazer  
Reg. No. 42,127Date: 10/24/03  
Energy Conversion Devices  
2956 Waterview  
25 Rochester Hills, Mi 48309Phone (248) 293-0440 extension 6260  
Fax (248) 844-2273RECEIVED  
CENTRAL FAX CENTER  
OCT 24 2003

OFFICIAL